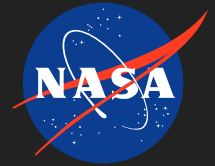


Miniaturized Thermal-Cooler for IC Applications, Phase I

Completed Technology Project (2004 - 2005)



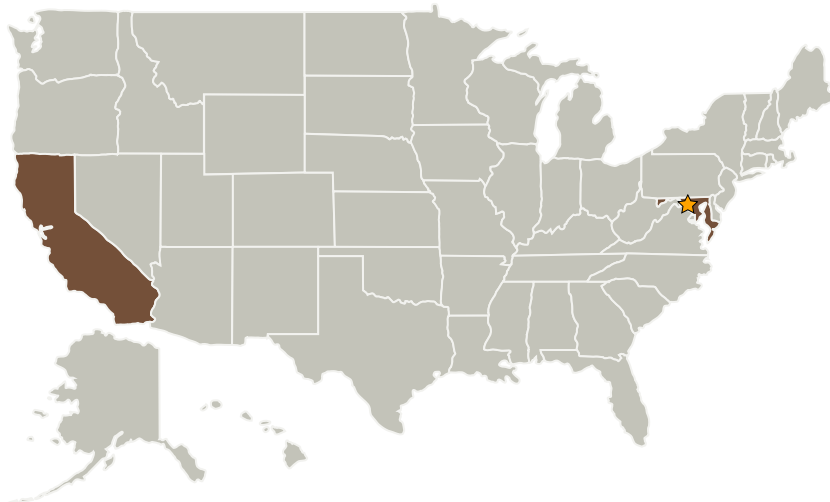
Project Introduction

This proposal is submitted for research on using MEMS technology to make unique, highly reliable, miniaturized capillary pumped coolers in the application of Thermal Control for Instruments (subtopic: E1.07). The proposed miniaturized thermal-cooler can be fabricated on Si wafer or directly on the back of the IC circuits. The proposed micro-cooler potentially has high mechanical reliability. The proposed micro-cooler has its own coolant supply and needs no extra coolant reservoir and supply.

Anticipated Benefits

Small size, low cost micro-cooler has a huge application market. It can be applied at all the micro-processors in PCs to enhance the performance. The potential market can be over billion dollars. Currently, there is no similar product in the market. Small size, low cost micro-cooler can be implemented in any high power IC to control the temperature in NASA and general applications. It can also be used in other equipment that requires operated at low temperatures, such as micro-laser generators, etc.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center
(GSFC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
LW Microsystem, Inc.	Supporting Organization	Industry	Burlingame, California

Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Jentung Ku

Principal Investigator:

Yin Liu

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.2 Thermal Control Components and Systems
 - └ TX14.2.3 Heat Rejection and Storage